ELOTEC

Quad-band GSM dialer

ELO-GSM51

Installation / User Manual v1.0

Safety instructions

Please read and follow these safety guidelines and assembly instructions in order to maintain safety of operators and people around:

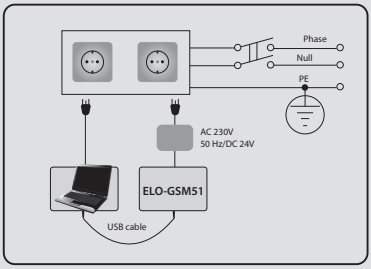
- Alarm and control device ELO-GSM51 (further referenced as the system) contains an integrated radio transceiver operating in GSM 850/900/1800/1900 MHz bands.
- Don't use the system where it can interfere with other devices and cause any potential danger.
- Don't mount the system next to medical equipment or devices, if they require so.
- Don't use the system in hazardous environment.
- Don't expose the system to high humidity, chemical environment or mechanical impacts.
- Don't attempt to personally repair the system.
- System label is on the bottom side of the device.

ELO-GSM51 is a device mounted in limited access areas. Any system repairs must be done only by qualified, safety aware personnel.

Mains power must be disconnected before any installation or tuning work starts. The system installation or maintenance must not be done during stormy conditions.

The system must be powered by main 10-24V 50Hz ~200mA AC or 10-24V ⎓ 200mA DC power supply

External power supply can be connected to AC mains only inside installation room with automatic 2-pole circuit breaker capable of disconnecting circuit in the event of short circuit or over-current condition. Open circuit breaker must have a gap between connections of more than 3mm.



Fuse F1 type C1S 2.5A. Blown fuse cannot be replaced by the user and the replacement fuses have to be exactly the same as indicated by the manufacturer.

The device is fully turned off by disconnecting 2-pole switch off device of the external power supply or any other linked device that the system Esim251 is powered from.

If you use I security class computer for setting the parameters it must be connected to earth.

The WEEE (Waste Electrical and Electronic Equipment) marking on this product or its documentation indicates that in the EU the product must not be disposed of together with household waste.

CE

Limited Liability

The buyer must agree that the system will reduce the risk of fire, theft, burglary or other dangers but does not guarantee against such events.

Elotec AS will not take any responsibility regarding personal, property or revenue loss while using the system.

Elotec AS responsibility according to local laws does not exceed value of the purchased system.

Elotec AS is not responsible for the quality of cellular services

Package Content:

The system ELO-GSM51 ..... 1 pcs

Manual ..... 1 pcs

GSM antenna ..... 1 pcs

Fastening holders ..... 3 pcs

About User Manual

This document describes remote alarm system ELO-GSM51, its operation and installation.

It is very important to read User Manual before start using the system.

A quick start guide is located in first two chapters. Chapter 3 and 4 describe additional system capabilities.

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1. General Information

1.1 Function

ELO-GSM51 is a microcontroller based device used to inform users about the alarm in automatic or security systems and control one electric appliance -relay.

1.2 Operation Description

Description of factory default settings.

Alarm and control systemELO-GSM51 works over GSM network. It works 24/7, i. e. it always reacts to the incoming signal.

When the alarm siren, motion sensor, fire alarm sensor, door sensor, any other sensor or PGM output gets activated, ELO-GSM51 system sends an SMS message and calls to the preset numbers until one of the five possible users answers the phone or rejects the call or until the call will be ended by the mobile service provider. After hanging up the phone the system turns back to the previous status. An SMS message with the name of the activated input (zone) is being sent until its successful delivery to one of the users or until it is delivered to all users. If you answer the call, the microphone gets activated for listening. After "hanging up the phone" the systems turs back to the previous status of active security.

ELO-GSM51 can control 1 electronic appliance (a relay) sending a password and a special command from a GSM phone of any of the users. You can, for example, turn on the heating, lighting, lift the gates, blinds etc.

The system will ignore requests coming from unknown telephone number or SMS message with wrong password.

List of other configurable system possibilities.

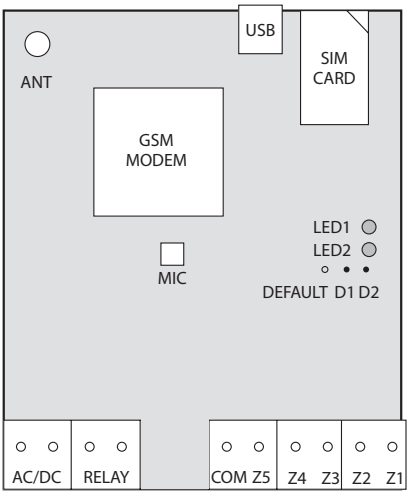
Input types	Normally open NO	Operation only when the signal is transmitted.
	Normally closed NC	Operation only when the signal is switched.
Ways of activating an event	Event when the input is activated (Alarm)	SMS is delivered when the signal is transmitted to the input.
	Event when the input is restored (Restore)	SMS is delivered when the previously transmitted signal in the input disappears.
	Impulse counting	SMS is delivered if the number of te preset number of impulses in the input is exceeded. Max value is 4294967295 impulses.
Ways of transmitting an event	SMS	Only SMS or various call combinations can be chosen. It is also possible to use only calls. Any of the users can be assigned only SMS or only calls or call combinations. Besides, any of the users can be assigned a particular input (zone) or their combination. E. g. a possibility to configure the system so that when input Z1 is activated SMS are sent only to users NR1 and NR5, and when Z2 is activated SMS is sent to all users and the call would be for NR4 and so on. When the functions SMSALL and CALLSALL are set SMS messages are sent to all users and the call would be delivered regardless of the fact whether the call was answered, rejected etc.
	Calls	
Ways of controlling output (relay)	Turning on/off by SMS	The relay can be turned on/off by sending the command by SMS message. You can turn on/off: 1. for a permanent status 2. for a set period 3. for a set hour 4. repeating turning on/off.
	Turning on/off by a call	The relay can be turned on/off by calling. You can turn on/off: 1. for a permanent status 2. for a set period 3. toggle (relay status changes after each call)
	Automatic turning on at the preset hour	The relay can be turned on for a set period at a set hour. E. g. the relay is turned on at 18:00 and it is on for 5 hours. After 5 hours it turns on automatically notifying the user about that.
Event register	Event register function	When the computer is connected it is possible to see activations, network strength etc.

1.3 Technical Specifications

Electrical and mechanical specifications

Supply voltage	10-24V 50Hz ~ 200mA max / 10-24V ⎓ 200mA max
Current used in standby mode	50mA max
GSM modem frequency	850/900/1800/1900 MHz
Number of "low" level (negative) inputs	4
Number of "high" level (positive) inputs	1
Allowable "low" level (negative) input voltage values	0-1.6V
Allowable "high" level (positive) input voltage values	5-50V
Number of outputs	1
Output type	NO (relay)
C1 output maximum commutating values	1A/24V DC; 0,5A/125V AC
Dimensions	82x63x20mm
Operating temperature range	-20…+55oC (-30...+55oC with limitations)

1.4 Connector Functionality



Picture 1

Short explanation of the main units

GSM MODEM	GSM network 850/900/1800/1900 MHz modem
SIM CARD	SIM card
LED	Light-emitting diodes indicator
DEFAULT	Connectors (D1 and D2) for restoring default settings
ANT	GSM antenna SMA type connector
USB	Mini USB connector

Connector functionality

Labeling	Explanation
AC/DC	Power supply pins
RELAY	Dry relay contact. Normally open (NO)
RELAY	Dry relay contact. Normally open (NO)
COM	Common pin
Z5	"Low" level input Z5
Z4	"Low" level input Z4"
Z3	"Low" level input Z3
Z2	"High" level input Z2
Z1	"Low" level input Z1

LED indicators functionality

LED1	Indicates SIM card status
LED2	Indicates network status

LED1 status	Meaning
OFF	SIM card is working properly
ON	SIM card error

LED2 status	Meaning
OFF	No network connection
Blinking 3 times per second	Poor network connection
Blinking 1 time per second	Medium network connection
ON	Excellent network connection

1.5 Connection Circuit

USEFUL INFORMATION

When choosing GSM cellular provider, it is worth inquiring whether the service is used in security application assuring fast and reliable SMS message delivery and phone call connection.

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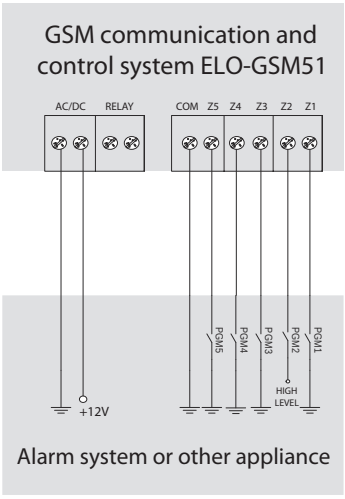
When choosing GSM cellular provider, it is worth inquiring whether the service is used in security application assuring fast and reliable SMS message delivery and phone call connection.

ELO-GSM51 and security unit COM must be connected.

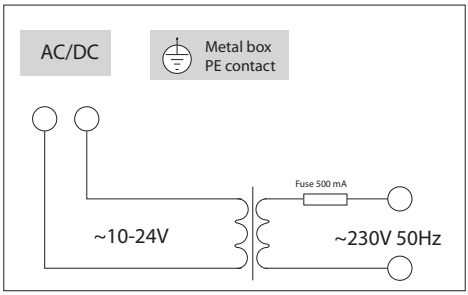
Inputs Z1,Z3,Z4,Z5 are connected to security unit PGM outputs if PGM are implemented as open collector circuit or any other circuit and if it commutates with COM.

It is also possible to connect Z1, Z3, Z4, Z5 inputs to, for instance, motion sensor or any other sensor as well as automatics device provided the inputs are commutated with COM.

Input Z2 is commutated with a "high level" impulse. Impulse duration is >600ms.



Picture 2



Picture3 AC power supply connection circuit

1.6 System Installation

The system can be installed only in a metal or non-flammable plastic enclosure. If the metal enclosure and transformer is used it is necessary to ground the enclosure using yellow/green colour cable. For the connection of 230V transformer use 3x0.75 mm2 1 thread double isolated cable. The primary circuit of the transformer must be connected through 0.5A fuse. 230V power supply cables cannot be grouped with low voltage cable group. For the connection of power supply and output connectors use 1 thread 2x0.75 mm2 cable. For the connection of input/output connectors use 0.50 mm2 1 thread cable.

1. Fasten the system in the box using fastening holders.
2. Place SIM card in the holder but make sure that SIM card PIN code is disabled. (PIN code can be disabled by putting SIM card into mobile phone and following proper menus). SIM card should not have any remaining SMS messages.
3. Connect the circuit as shown in fig. No 2. Power supply cables are connected last). When connecting ELO-GSM51 to security central system power supply usually the security system AUX output is used.
4. When AC power supply (ground transformator) is used connect according to circuit no. 3. In this case you do not need to connect any other power supplies.
5. The system will start in less than a minute. LED2 indicator should be blinking or be ON indicating connection to GSM.

2. System Pre-operation and the Main Control Commands

VERY IMPORTANT!

Underscore symbol '_' in this manual is used to represent space. When writing SMS messages, every underscore symbol should be replaced by single space symbol. XXXX – means password. Don't leave any space at the beginning and the end of the message.

Default password must be changed before any configuration through SMS is possible!

To set ELO-GSM51 system parameters easier and quicker you can use the computer, USB cable and configuration program ConfigTool, available from Elotec PartnerWeb. See also chapter 4.2.

2.1 Selecting device language and verification of SMS central number

The language in which the device communicates with the user can be chosen before changing factory default password. To change the language in the system that is already configured reset default settings as described in 3.1 appendix.

Send SMS message with the required language code to the number of the SIM card inserted in ELO-GSM51.

E.g., if you want to set the English language send the following SMS message: EN

30-60 seconds later you should get an SMS message: „English language confirmed." Go to chapter 2.2 upon reception of this message.

Table of possible languages

Language	Code
lithuanian	LT
english	EN
russian	RU

Otherwise check for network connection and call ELO-GSM51 system from your mobile and wait until the system drops the call. You should get an SMS message asking to change default password. Ot- herwise check for network connection and change SMS central number.

SMS central number is saved in SIM card, therefore if SIM card has been used to send SMS messages with a mobile phone, then you don't' need to change SMS central number. Often SMS central number is already saved in SIM card by cellular operator.

Central number can be entered by sending SMS message:

```
XXXX_SMS_+37011111111
```

XXXX – is a password. Default password is four zeros: 0000. SMS central number is provided by cellular network provider.

Example: 0000_SMS_+37069899992

Message should be sent to the number of SIM card which is placed into the system. If all went correct, the system will send a message: *SMS central number has been successfully changed to +37011111111*

2.2 Password Change

All SMS commands start with a password, please memorize it. Manufacturer default password is four zeros 0000, which ***must be changed*** before any other programming via SMS is possible.

Manufacturer default password can be changed by sending the following SMS message to ELO-GSM51:

```
0000_PSW_XXXX
```

To replace your password, send the following SMS message:

```
YYYY_PSW_XXXX
```

XXXX is any four digit number except four zeros.

Non-numerical characters like dots, colons, spaces are not allowed. YYYY is the old system password. If you forgot the password, default manufacturer password can be restored, see chapter 4.1 for more details.

2.3 User Numbers

IMPORTANT! If you use a different cell phone than the intended users' to program the device, the parameter STR must be set to OFF before user numbers are programmed, or you will block yourself from further action. ***See section 3.4***.

ELO-GSM51 allows to pre-program up to five different mobile numbers which will have access to and control the system. NR1 is mandatory while others can be skipped. All numbers must be entered starting with international country code, e. g. national code for Norway is 47, UK – 44. By default the system starts sending all messages and in the event of alarm starts calling on the first number, and if the first call is unsuccessful, it immediately tries reaching subscriber No2 etc.

2.3.1 Saving or Changing Numbers

Send SMS message with the following text to Esim251:

```
XXXX_NR1:4711111111_NR2:4711111111_NR3:4711111111_NR4:4711111111_
NR5:4711111111
```

Ones should be replaced with user numbers.

Numbers don't have to be entered in sequential order right away. E. g. user can enter first and fourth number by sending the following SMS message:

```
XXXX_NR1:4711111111_NR4:4711111111
```

Or individually one number at a time:

```
XXXX_NR3:4711111111
```

Numbers can be changed same way as described above. New number will overwrite old one, therefore no erasing is necessary.

2.3.2 Verification of Saved Numbers

To inquire the system about pre-programmed numbers, send the following SMS message:

```
XXXX_HELPNR
```

The system will reply with all pre-programmed numbers.

2.3.3 Deletion of Saved Numbers

To erase NR2-NR5, send the following SMS message:

```
XXXX_NR2:DEL_NR3:DEL_NR4:DEL_NR5:DEL
```

E. g. XXXX_NR3:DEL

The system will not allow erasing first number NR1. It can only be modified.

2.4 Date and Time Settings

It is important to set correct date and time so that the system can send reports at specified times.

Date and time can be set by sending the following format SMS message:

```
XXXX_MMMM.mn.dd_va:mi
```

where MMMM means year; mn - month; dd - day; va - hour; mi - minutes

E. g. XXXX_2009.01.01_14:15

3. Additional System Capabilities

3.1 Renaming alarm, restore text and controller names

Manufacturer initially set the following zone and controlled output names:
Zone1, Zone2, Zone3, Zone4, Zone5, OUTPUT1

E. g. if during the alarm Z1 zone was triggered, the system sends SMS message with the text: Zone1

Alarm text changes are made by sending the following SMS message:

```
XXXX_Z1:NewAlarmText;Z2:NewAlarmText;Z3:NewAlarmText;Z4:NewAlarmText;Z5:NewAlarmText;
```

E. G. XXXX_Z1:Intrusion though the door;Z2:Fire sensor triggered;

Texts can be changed all at once for all zones, several of them or one by one. Maximum text for one zone is 24 characters. The space is equal to one character. Each new text must be followed by a semi colon. As semi colon is used for separating texts for different zones, it cannot be used in the middle of alarm texts it can only be used at the end. Texts cannot be the same as control commands.

Triggered zone restore text

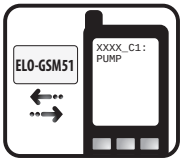
If you want to be notified by an SMS message when the triggered zone is restored Restore mode must be turned on. The mode is turned on by sending a particular SMS command. Please refer to chapter 3.9 or configuration program.

Zone restore text is changed by sending the following SMS mesaage:

```
XXXX_ZR1:NewRestoreText;ZR2:NewRestoreText;ZR3:NewRestoreText;ZR4:NewRestoreT
ext;ZR5:NewRestoreText;
```

Controller name can be changed by sending the following SMS message:

```
XXXX_C1:NewControllerName
```



Controller name cannot be followed by a semi colon. You cannot change zone names and controller names at the same time.

E. g. XXXX_C1:PUMP

3.2 Enabling/Disabling Zones

NOTE

Manufacturer set all the zones activated, i. e. in mode ON.

USEFUL INFORMATION

The zones can be enabled/disabled together or separately one by one.

Enabling Zone

Any zone can be enabled by sending the following SMS message:

```
XXXX_Z1:ON;Z2:ON;Z3:ON;Z4:ON;Z5:ON;
```

Disabling Zone

Any zone can be disabled by sending the following SMS message:

```
XXXX_Z1:OFF;Z2:OFF;Z3:OFF;Z4:OFF;Z5:OFF;
```

E. g. XXXX_Z2:ON; or XXXX_WINDOWS:ON; or XXXX_Z2:OFF; or XXXX_WINDOWS:OFF;

3.3 Info on Status SMS

ELO-GSM51 can any time be inquired about signal strength and the status of zones active at the time when SMS message is sent. At the same time system test is performed. If the answer to the request has been received, it means the system finely operates.

It is also useful for those using prepayment service – you can check if the credit in the account is sufficient for sending an SMS message. Send the following SMS message:

```
XXXX_INFO
```

The reply SMS will have following info: **e. g. 2008.08.07 11:15**

Signal strength satisfactory. ***Z1:OK/ALARM Z2:OK/ALARM Z3:OK/ALARM Z4:OK/ALARM Z5:OK/ALARM***

where OK means that the alarm in zone did not go off. ALARM – if it went off.

By default, this status SMS message will be sent daily at 11:00 in the morning. These parameters can be configured by sending the following SMS message:

```
XXXX_INFO:PP.VV
```

PP – message period in days, valid values [00-10].

VV - time when message is sent, valid values [00-23].

E. g. XXXX_INFO:01.10 means that status message will be sent every 1 day at 10:00.

If PP value is 0, and VV in the range of [1-23], then periodic status messages will be sent multiple times per day, with period being specified as VV time.

E. g. XXXX_INFO:0.2 means that status message will be sent every 2 hours.

To disable periodic status messages send the following SMS message:

```
XXXX_INFO:00.00
```

The status messages will not be sent until enabling or restoring default parameters or receiving previously described XXXX_INFO:PP.VV SMS message.

3.4 Blocking Unknown Numbers

By default ELO-GSM51 can be controlled from any of the pre-programmed numbers NR1-NR5. However, the user can access the system and control parameters and outputs from any number as long as password is known.

To enable this feature send the following SMS message:

```
XXXX_STR:ON
```

To disable this feature send the following SMS message:

```
XXXX_STR:OFF
```

3.5 Remote Microphone Listening

NOTE

To enable this feature it is necessary to connect microphone connector to MIC slot. The microphone is additional equipment tha can be purchased in trading centers.

You can listen to what is going on in the secured premises by sending the following SMS message:

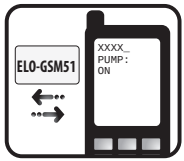
```
XXXX_MIC
```

The system will ring the sender of the received SMS, and upon answering the call, the user can listen to any sounds in the building. The phone call must be answered within 20 seconds otherwise the system will stop trying and return to previous state.

3.6 Managing C1 Controller. Timer.

ELO-GSM51 contains a controller C1- a relay output. It can be used to control various electrical devices such as electric pumps, heating, lighting etc. When the controller is enabled RELAY connectors are connected.

The device is turned on by sending the following SMS message:




```
XXXX_C1:ON
```

The device is turned off by sending the following SMS message:

```
XXXX_C1:OFF
```

Instead of C1 it is also possible writing a real controller name.

E.g.. XXXX_PUMP:ON

Timer

ELO-GSM51 has internal timer clock. This feature allows any controlled output to be switched on or off for a specified time period. The following SMS command should be sent:

```
XXXX_C1:ON/OFF:vv.mm.ss
```

ON – output enabled. OFF – disabled

vv – hours, valid values [00-23] mm – minutes, valid values [00-59] ss - seconds, valid values [00-59]

It is not allowed to have all values equal zeros. Zeros it is not allowed to have all values equal

E. g. to switch the pump on for 01 minutes and 23 seconds, send SMS XXXX_PUMP:ON:00.01.23

If the pump was enabled before and user want to disable it for 01 minute and 23 seconds, send SMS XXXX_PUMP:OFF:00.01.23

If you want to use more C1 Output capabilities as TOGGLE, automatic enabling and disabling for a particular hour or control, use configuration program „ConfigTool".

3.7 SMS Message Delivery to Multiple Users

Upon activated alarm in security system ELO-GSM51 SMS messages are repeatedly sent until first successful delivery to one of the users. The system starts with NR1 and if delivery fails, it follows with NR2 etc.

It is also possible to set the system so that it sends SMS message to all recorded users.

To enable this function send the following SMS message:

```
XXXX_SMSALL:ON
```

To disable this function send the following SMS message:

```
XXXX_SMSALL:OFF
```

If you want to configure SMS message delivery only for particular users or only for particular zones, refer to chapter 3.9 or use configuration program.

3.8 Calling all users

During the alarm ELO-GSM51 system starts calling NR1. If the call to NR1 was unsuccessful or the subscriber was out of network coverage the call is forwarded to NR2 etc. If the user rejected the call or answered te call during the alarm the system stops calling.

However, you can set the system to call all recorded users regardless of the fact whether the user answered or rejected the call, was out of network coverage or was engaged.

To turn on this feature send the following SMS message:

```
XXXX_CALLALL:ON
```

ATTENTION!
When this feature is enabled it will not be possible to stop calling the next user in the sequence even if the call is answered.

To disable this function send the following SMS message:

```
XXXX_CALLALL:OFF
```

If you want to configure calling only to particular users or only for particular zones use configuration program.

4. Appendix

4.1 Restoring Default Parameters

To restore default parameters:

- disconnect power supply and USB connector
- short circuit (connect) connectors D1 and D2
- connect power supply for 5 seconds
- disconnect power supply
- disconnect connectors D1 and D2

4.2 ELO-GSM51 ConfigTool configuration software

To configure the system quicker and easier as well as use more system capabilities use configuration program „ ConfigTool"

Elotec ConfigTool can be downloaded from http://partner.elotec.no/

Before connecting USB cable to the computer read ConfigTool user guide available in the program chapter HELP.

4.3 Technical Support

Indication	Possible reason
Indicator is off or not blinking	· no external power supply · circuit not properly connected · blown fuse · no network signal
Indicator blinking several times per second	· SIM card is not inserted · PIN code hasn't been disabled · Sim card not active
System does not send any SMS messages and/or does not ring	· SIM card account depleted · incorrect SIM central number · no network signal · user number is not programmed (or disabled access from unknown numbers)
Received SMS message "Incorrect Format"	· incorrect syntax · extra space symbol left in SMS message
No sound while listening to remote microphone	· microphone not connected · microphone connection incorrect
While listening to remote microphone outside noise heard	· Change the position of the microphone or its lead in respect of system panel